

OVERVIEW OF CHRONIC HEPATITIS B & C VIRAL
INFECTIONS

BY

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- Hepatitis literally means inflammation of the liver and its consequences
- Causes
- Viruses
- Drugs
- Alcohol
- Autoimmune
- Toxins

- Viral hepatitis refers to a group of inflammatory diseases of the liver caused by Hepatotrophic viruses
- Viral agents that cause hepatitis belong to the following groups:

Primary Hepatotrophic Viruses:

1. Hepatitis A Virus (HAV),
2. Hepatitis B Virus (HBV),
3. Hepatitis C Virus (HCV),
4. Hepatitis D Virus (HDV)
5. Hepatitis E Virus (HEV).

This group of viruses have special affinity for the hepatocytes and specifically target them for infection.

2. Secondary Hepatotrophic Viruses

Herpes viruses:

Cytomegalovirus (CMV),

Epstein-Barr virus (EBV),

Herpes simplex virus (HSV) & Human herpes viruses 6, 7, 8
(HHV)

- Varicella virus
- Adenoviruses
- Entero-viruses
- Paramyxovirus

- **Parvovirus B19**
- **Rubella virus**
- **Corona virus** (agent that causes SARS)

This group of viruses cause inflammation of the liver as part of a multi-organ involvement especially in immune-compromised individuals

- **Exotic Hepatotrophic Viruses (i.e. viral haemorrhagic fevers)**
 - Flavi- viruses: Dengue fever, Yellow fever
 - Filo- viruses: Ebola virus, Marburg virus
 - Bunya viruses: Rift Valley fever virus, Crimean Congo haemorrhagic fever virus
 - Arena-virus: Lassa fever

- Hepatitis B and C represent one of the major threats to global health
- WHO estimates that 2 billion people have been infected with HBV
- 350-400 million people living with chronic infections
- Results in 1million deaths annually
- In Nigeria is a highly endemic zone for HBV
- Over 70% of the population show evidence of past infection with the virus
- Prevalence 7.3-24% (average 13.7%)
- 23 million people are infected and about 5million die of the consequences

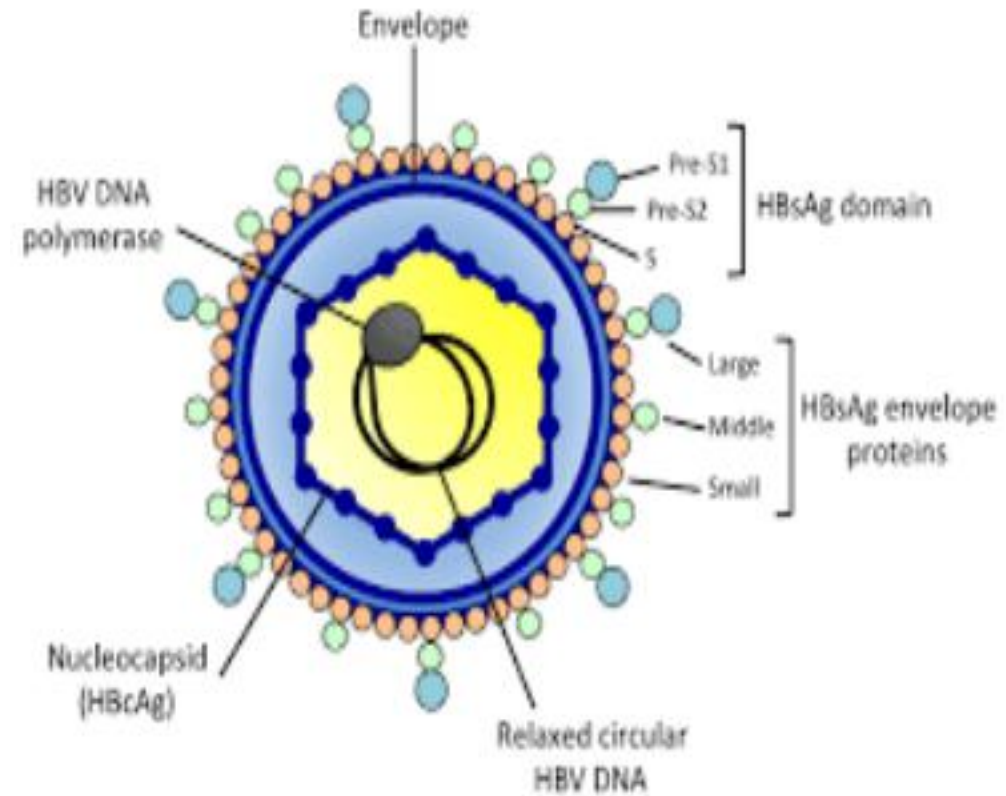
- HBV can survive and remain infectious on environmental surfaces for at least 7 days
- HBV is about 100x more infectious than HIV

Geographic prevalence of chronic hepatitis B



- HBV belongs to the family of *hepadnaviridae*
- The genome is a circular, partially double-stranded DNA with about 3200 base pairs
- The genome has 4 open reading frames (ORF) or genes: S, P, C and X
- HBV is not directly cytopathic; its hepatic injury is immune-mediated
- HBV has 8 genotypes, namely, A, B, C, D, E, F, G & H (in Nigeria, genotype E is predominant)

Structure of hepatitis B virus



MODES OF TRANSMISSION OF HBV

1. Horizontal

- Sexual (sexual risk high in individuals with multiple sexual partners)
contamination with sharps, needles
- IV drug use
- Transfusion/Dialysis with unscreened infected blood
- Trado-medical procedures(ear piercing, uvulectomy, circumcision, acupuncture, tattooing)

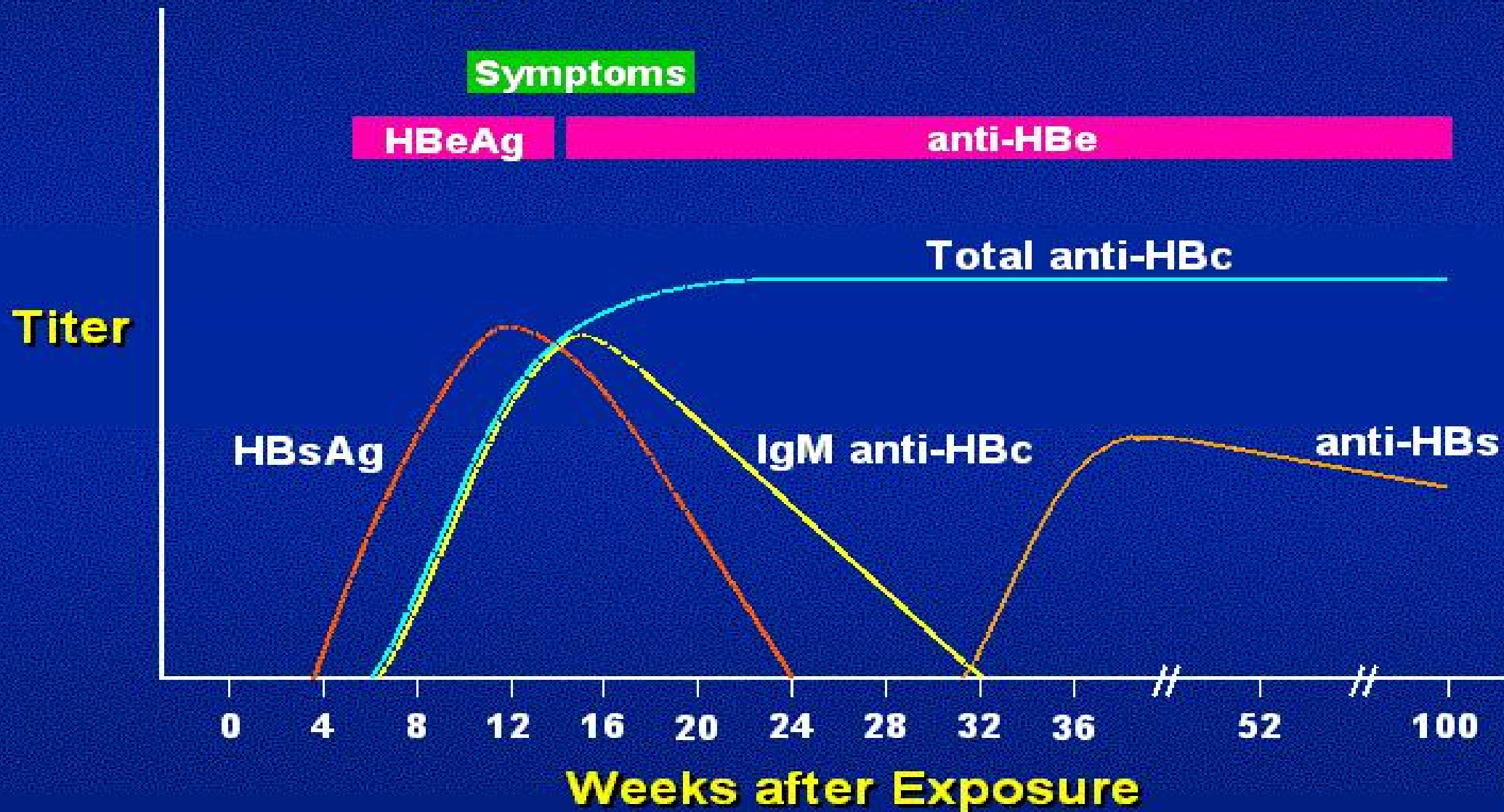
2. Vertical

From mother to child

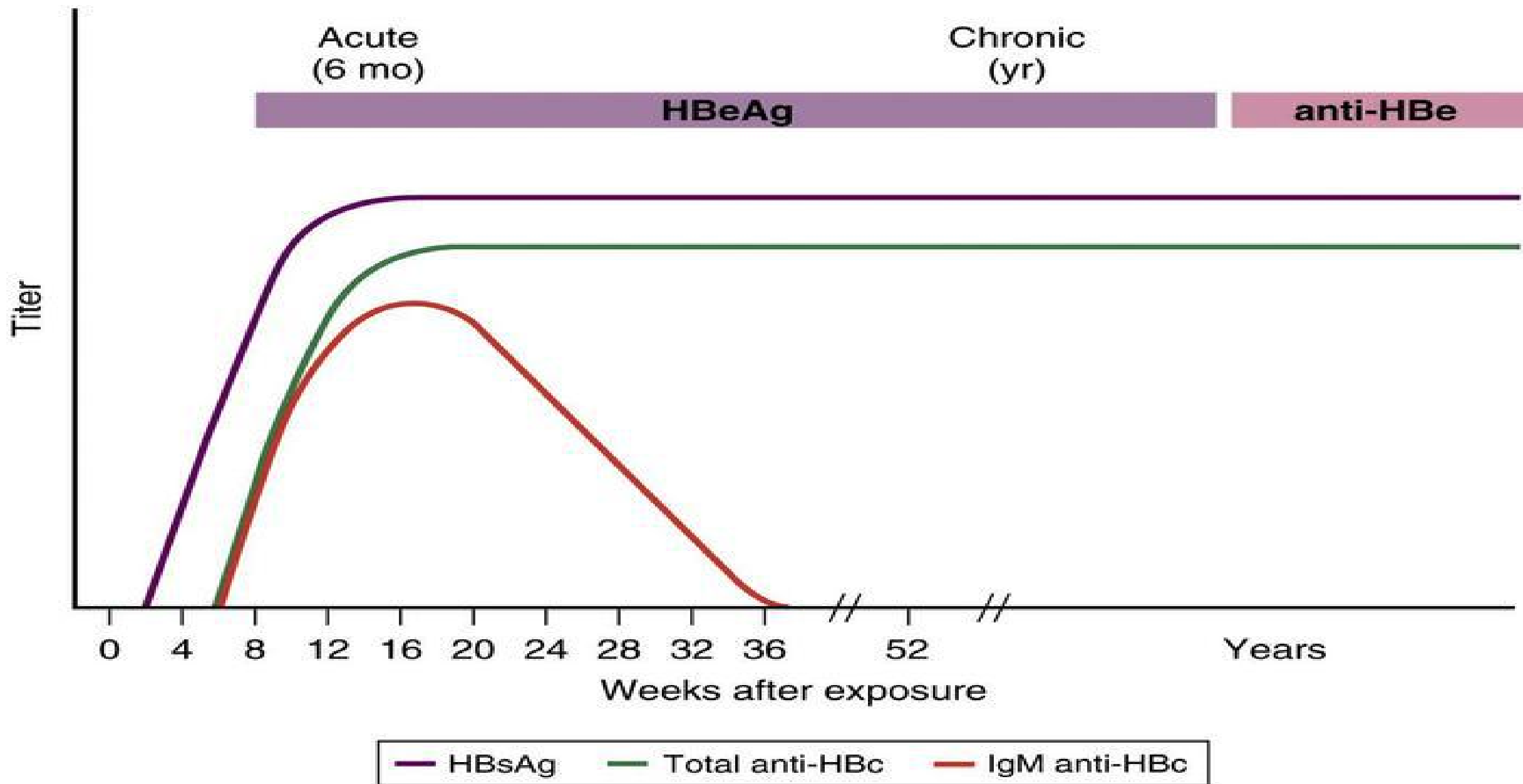
Clinical spectrum of HBV INFECTION

- 1 Asymptomatic carriers
- 2 Acute hepatitis(anicteric, icteric and recovery phases)
- 3 Fulminant hepatitis
- 4 Chronic hepatitis
- 5 Liver cirrhosis
- 6 Hepatocellular carcinoma
- 7 Extra hepatic syndromes

Acute Hepatitis B Virus Infection with Recovery Typical Serologic Course



Progression to Chronic Hepatitis B Virus Infection Typical Serologic Course



STRUCTURE OF NORMAL LIVER





- Chronic hepatitis is the ability of the virus to persist beyond 6 months in the body and pose lifelong threat of liver cirrhosis and HCC
- CLINICAL EVALUATION
- History
- Features of advanced CLD
- LAB DIAGNOSIS
- Viral markers, assessment of hepatic injury/severity(LFT,PT)FBC,
- Liver imaging(USS to determine fx of advanced liver dx
- Molecular biology: HBV DNA viral load assessment
- Fibro scan/liver biopsy
- Categorization of subjects after evaluation

MANAGEMENT STRATEGY

- **Pre-treatment counselling**
- The health implications of chronic HBV
- The chronic nature of the disease-monitoring and treatment may be lifelong
- The possibility that spouse(s), children and close relatives may be infected and the need to screen them
- The need to avoid further health risks such as alcohol and traditional herbs
- The financial implications of treatment options in relation to the desired goal of treatment
- Potential side effects of the treatment options should be discussed

TREATMENT FOR CHBV IN NIGERIA

- Interferon
- Tenofovir
- Lamivudine
- Telbivudine
- Adefovir
- Entecavir

TREATMENT OPTIONS FOR SPECIAL GROUPS

- HBV/HCV
- HBV/HIV
- HBV/HDV
- HBV/Pregnancy (HBIG/Vaccine, oral NUCs)
- Children
- Chemotherapy(cancer) and immunosuppressive therapy(including transplant patients)

PREVENTION OF HEPATITIS B INFECTION

1. Health education for the public and health care providers.
2. Universal immunization(infants, children, adolescents) and implementation of NPI scheme for HBV vaccination.
3. Contact tracing and immunization of non-immune persons.
4. Screening and vaccination of all special risk groups especially surgeons, laboratory workers, dentists, emergency workers, and law enforcement agents.
5. Proper disposal of all sharps instruments(needles, lancets, blades etc)

6. Screening of all pregnant women at ANC and immunization of the non-immune. Immunization of babies born to HBV-positive pregnant women immediately after birth as well as giving HBIB.
7. Screening of all blood/organs and blood products before transfusion/transplantation
8. Non-recycling of disposable instruments used in medical procedures (needles, lancets)
9. Sterilization of all instruments used by traditional medical practitioners for invasive procedures
10. Easy availability of HBIG for post-exposure prophylaxis
11. Practice of ABC as in the prevention of HIV infection

- Active immunization: HBV vaccine, 20ug(1ml) at 0,1,6 months, 40ug for the immune-compromised and haemodialysis patients.
- Neonates: 10ug (0.5ml) 0,6,10,14 weeks

HBV PROFILE

- HBsAg----- negative
- HBsAb-----negative
- HBeAg-----negative
- HBeAb-----negative
- HBcAb-----negative

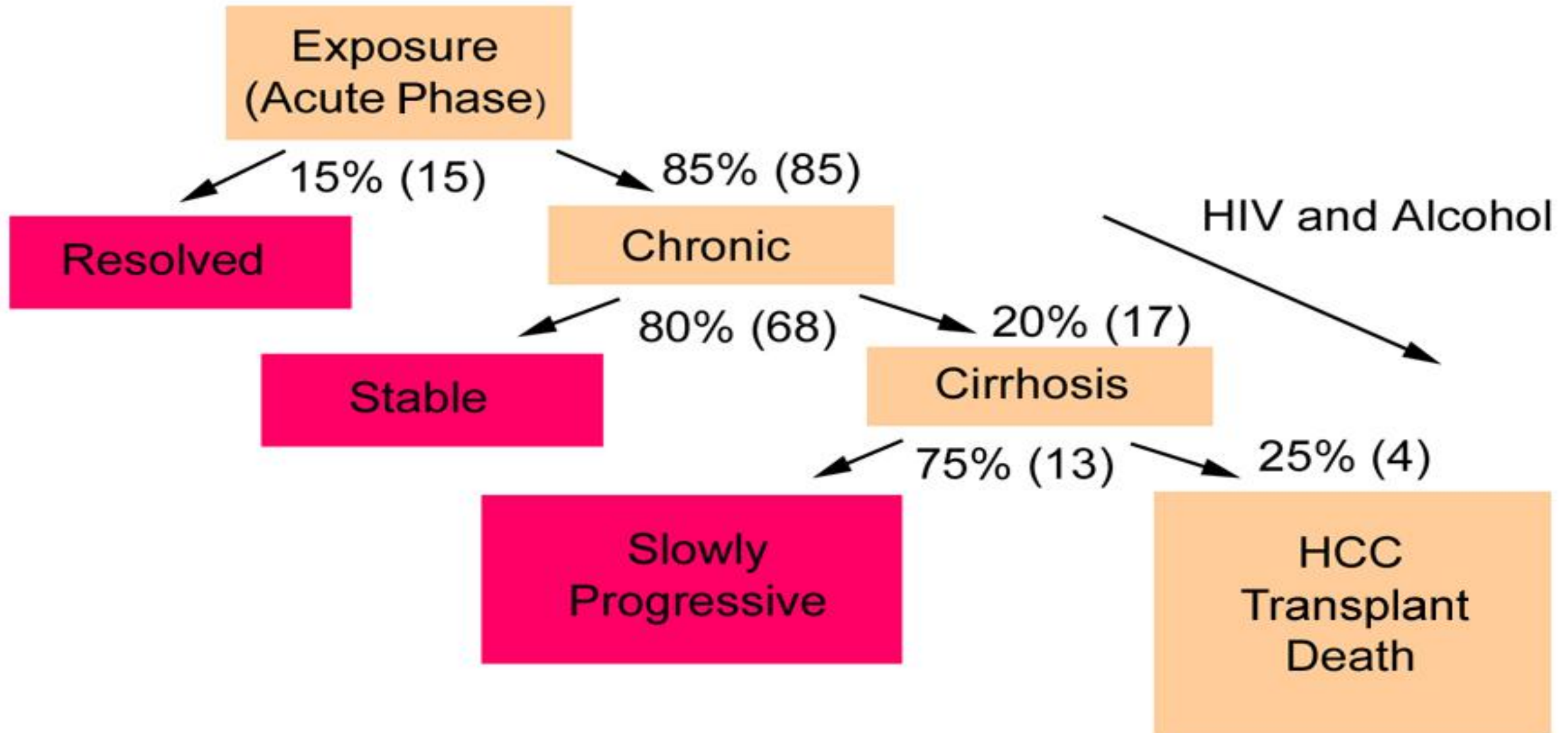
PLEASE GO FOR IMMUNIZATION

HEPATITIS C

- Approximately 170 million people are chronically infected with hepatitis C world wide
- In Nigeria about 5 million are chronically infected
- HCV can survive outside the human body at room temperature on environmental surfaces for up to 13 days
- About 80% of those infected become chronic carriers
- 10-20% develop chronic liver disease
- Prevalence 0.5-4%
- Transmission of HCV is similar to HBV

- The genome is organized into structural (S) and non-structural (NS) regions
- HCV is a small, single stranded enveloped RNA virus of the *Flaviviridae* family
- There are 6 major genotypes: 1 (1a, 1b), 2, 3, 4, 5 & 6 (genotype 1 is predominant in Nigeria, >60%)
- Diagnostic tests are serum antibodies to HCV (anti-HCV) by 3rd generation ELISA technique and HCV RNA by polymerase chain reaction (PCR)

Natural History of HCV Infection



HCV Genotypes & Geographical Locations

Genotype	Geographical & Racial Distribution
1	United States, Europe, Nigeria
2	Europe
3	Europe
4	Egypt, Middle East, Central Africa
5	South Africa, France, Spain, Belgium, Syria
6	Southeast Asia, Asian Americans, Asian Australians

HCV EPIDEMIOLOGY

- More than 170 million people are chronically infected worldwide
- US prevalence rate = 1.3% to 1.6%; African Americans 3% and whites 1.5%

Egypt has the highest world rates (15%),

Prevalence in Nigeria 0.5-4%

HCV can survive and remain infectious on environmental surfaces for at least 13 days

Transmission of HCV is similar to HBV

CLINICAL FEATURES

- Acute hepatitis C is rarely seen in practice because almost all cases are asymptomatic
- HCV RNA becomes detectable within 2-3 weeks of infection and anti-HCV sero-conversion occurs anytime from 15 days to 3 months
- 70-80% of HCV cases progress to cirrhosis within 2-3 decades
- Sequelae of chronic HCV include cirrhosis, liver failure & HCC
- Extra-hepatic manifestations include: Types 2 & 3 cryoglobulinaemia, glomerular disease, B-cell non-Hodgkin's lymphoma, porphyria cutanea tarda, lichen planus & sicca syndrome

- Patients may be asymptomatic
- Acute symptoms similar to HBV
- If infection lasts >6 months, chronic HCV

DIAGNOSIS

Detection of Antibodies Against HCV Antigens:

- Enzyme-linked immune-sorbent assay (ELISA); the latest, ELISA 3 detects antibodies against HCV core (C22) & other non-structural regions (NS3, NS4 & NS5) as early as 8 weeks with sensitivity & specificity rates of 99%

- Recombinant immune-blot assay (RIBA); this is used for confirmation

Serum HCV RNA by PCR; this is a direct assay that helps to quantify the HCV genome

- Genotyping
- Liver biopsy

- RIBAVIRIN
- SOFOSBUVIR
- LEDISPAVIR
- DACLASTAVIR

TAKE HOME MESSAGES

- Incidence/prevalence rates of Chronic HBV and HCV rising
- CHBV and CHCV if not treated will lead to cirrhosis and hepatocellular carcinoma.
- Get tested to know your status
- Treatment options are now readily available in Nigeria
- Vaccination can be protective and lifesaving for CHBV
- Currently there is no vaccine for HCV
- Avoid risky behaviours that may predispose you to acquiring these infections

GET TESTED NOW



- Each participant here should kindly disseminate this information to at least 50 people.
- Let all hands be on deck in preventing the spread of these viruses.

A green rectangular sign with rounded corners and a white border, tilted upwards. The sign features the words "Thank You" in a white, bold, sans-serif font. The sign is supported by two silver metal poles. The background is a clear blue sky with a few wispy white clouds. The sun is visible in the upper right corner, creating a bright glow.

Thank You